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**PATENT APPLICATION**

**Applicants Docket No.: MSD02**

**APPLICATION FOR  
UNITED STATES UTILITY PATENT**

**TO ALL WHOM IT MAY CONCERN:**

Be it known that we, **Robert H. Murray, and John R. Murray**, citizens of the United States of America, both residing at 52 Manor Hill Drive, Fairport; New York 14450, State of New York and County of Monroe, have invented

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**SAFER TOY BALLOONS AND**  
**METHODS FOR IMPARTING UNPALATABLE TASTE TO SAME**

**Patent Application of Robert H Murray & John R. Murray, Fairport, NY**

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SAFER TOY BALLOONS AND  
METHODS FOR IMPARTING UNPALATABLE TASTE TO SAME

5 This Application is based on a Provisional Patent Application No. 60/431116 filed 12/05/2002.

**Related Applications;**

This application is related to U.S. Application Serial No. \_\_\_\_\_  
(Applicant's Docket MSD01, entitled "A SAFE TOY BALLOON CLOSURE AND SEALING  
10 DEVICE AND ASSEMBLIES USING SAME having a common inventor and filed herewith on  
the same day.

**Field of the Invention**

This invention relates to toy balloons in general and particularly to elastometric  
toy balloons and to methods for making uninflated and inflated balloons safer from  
15 risk of ingestion injuries.

**Background of the Invention.**

For a number of decades, toy balloons have been the leading cause of death  
from toys in young children. According to the U.S. Consumer Product Safety  
Commission data, in a 10-year period ending October 2002 there were 81 deaths, 49  
20 were under age three, 29 were ages three and over, with an average age of four  
years. An additional 118 incidents of injury involving toy balloons required medical  
treatment and were the patient was released on the same day. Ten incidents  
required further hospitalization.

It is common knowledge that young children, especially those three years of  
25 age and under, are inclined to place objects they find into their mouth. If the objects  
are small, sharp or breakable there is the possibility for injury by choking or even  
death by asphyxiation. There is a standardized choke test for children of all ages.

The test apparatus for this choke test consists of a vertical tube 1-1/4 inch in diameter and 2-1/4 deep with a partition extending upward at a 45-degree angle from a bottom corner of the tube. A small part, placed within the tube, is considered suitable for children of all ages if any portion of the part projects above the top of the  
5 tube.

Unfortunately, toy latex balloons are exempt from this small parts safety test. Balloons are often given away at restaurants and other events and are arguably the lowest cost and most popular toys purchased to delight young children. Most parents are aware of the dangers from choking. Indeed, each balloon package is required to  
10 carry a warning notice in a specified type size as follows:

**"! WARNING: CHOKING HAZARD – Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once."**

Making such balloons safer is therefore most desirable, especially if it can be  
15 accomplished at low or no cost to the consumer.

Usually the neck portion of inflated toy balloons is knotted in order to seal the balloon, and usually affords no apparent or separate safety protection by itself. The applicant has submitted a separate patent application for a closure and sealing device for toy balloons that would afford a limited degree of protection by the use of  
20 such a device.

Past efforts at making toy balloons safer appear as an adjunct of attaching balloons to inflating and sealing devices that are large enough to discourage ingestion because of their physical size. In general, closure and sealing devices such as valves, disks or other mechanical closure means. Examples of a valve  
25 would be the applicant's U.S. Patent No. 5,496,203, Balloon Valve Assembly, (Murray). Other sealing devices would include a molded plastic disk marketed under the trade name SAFETITE® DISK by Premium Balloon Accessories, Inc. of Sharon Center, Ohio, US Pat. No D359,229 (Jules). Each of these devices passes the aforementioned safety test for all ages. It has been found that in many cases the

balloon neck will remain attached to the sealing device and thereby be less likely to be ingested, however these devices are comparatively heavy, expensive and their use, it is believed, limited to less than ½ percent of balloon's sold.

There is therefore a need for very inexpensive methods that make toy balloons  
5 safe by rendering portions of a toy balloon bad, unpalatable, offensive tasting,  
repulsive tasting, obnoxious or repugnant tasting, if the balloon is used in a manner  
which might lead to ingestion of the balloon or parts thereof. Within this application,  
the above terms are to be considered interchangeable. It is intended that a general  
degree of revulsion be conveyed by the words respective position in the list from bad  
10 tasting to unacceptably repugnant. In addition, by definition reference to safety  
coating 53 shall include and be an equivalent of repulsive taste agent 53,

The inclusion or application of a repulsive taste agent may be incorporated  
during manufacture of an inflatable member such as an elastomeric toy balloon or as  
part of a postproduction process as for example, when imprinting the elastometric toy  
15 balloon, or as a means to process and incorporate the repulsive taste agent to an  
existing inventory of untreated balloons.

For some applications, for example inflating a toy balloon by mouth, it may be  
desirable to render some portions of the toy balloon, like the balloon neck relatively  
free of an unpalatable taste, or less repulsive than other portions.

20 The exterior surface may be made offensive tasting in areas where the balloon  
has been imprinted by the inclusion of an offensive taste agent in the ink applied to  
the exterior by imprinting machines, as for example US Pat No. 4,478,142 Balloon  
Printing Machine with Silk-screen (Santorpneous) and US Pat No. 4,829,894 Balloon  
Printing Machine, (Gardner), using ink containing a offensive taste agent while the  
25 interior surface of the main body might be substantially coated during the balloon  
inflation stage, for example, in preparation for printing, with a repugnant taste agent.  
If the balloon were to burst and create small chards, each of the small chards would  
be unpalatable and therefore expelled from the mouth, thereby decreasing the  
likelihood of injury or death from chocking.

Limited safety protection would be afforded by having portions of the exterior contain the repulsive taste agent. Far greater protection would be afforded by applying the repulsive taste agent to the balloon interior alone or in combination with another treatment, as for example a product such as Hi-Float™, US Pat, No. 5 4,634,395 entitled "Inflatable Elastomeric Balloons Having Increased Buoyant Lifetimes" (Burchett), which is introduced into the balloon interior to lengthen the flying time of helium filled balloons.

By leaving the exterior of the neck portion of the toy balloon, substantially free of the offensive taste agent a user could inflate the balloon by mouth without 10 encountering a substantial amount of offensive taste.

A procedure to provide an added degree of safety and to isolate the user more completely from an unpalatable taste during inflation would be to employ a balloon support inflation aid (similar to Fig. 5) and passes the aforementioned safety test. An example, the applicant's Balloon Valve Assembly (Murray US Pat 5,496,203) 15 incorporated herein by reference. A cost saving improvement to the Murray valve would be to omit the valve flap while retaining the balloon support features. An alternative would be a simple valve-less tube as shown in Fig. 5 having head portion to support the balloon neck during inflation and a stem portion to keep the balloon further from the users face and thereby keep the neck portion from being propelled 20 into the users throat if the balloon should burst during inflation or the user accidentally inhaling. The oval head of the Murray Balloon Valve Assembly has been found particularly easy to use and effective in supporting the balloon. Without a valve, the inflation aid offers the added benefit of making the balloon neck easier to pinch during inflation process.

25 **Summary of the Invention**

In accordance with one aspect of the invention, there is provided a safe toy balloon including (a) an inflatable member having an exterior surface, an interior surface, a neck portion and a body portion; and (b) a safety coating formed on one or more of said surfaces of the inflatable member, the safety coating consisting

essentially of repulsive taste agent so that a person or child placing a broken balloon or small part of the balloon in the mouth will cause an automatic rejection and expulsion of the tainted parts thereby making toy balloon use safer.

In accordance with another aspect of the invention, there is provided a method  
5 of producing a safer toy balloon including (a) providing a dipping assembly containing at least one toy balloon material supporting mandrel; (b) providing a bank of vats including at least one vat containing liquid toy balloon material; (c) coating the at least one toy balloon material supporting mandrel with a repulsive taste agent to achieve a repulsive taste coated mandrel; and (d) dipping the repulsive taste coated mandrel  
10 into the at least one vat containing liquid toy balloon material to form a toy balloon having a repulsive interior coating from the repulsive taste coated mandrel and thereby cause an automatic rejection and expulsion of the tainted parts should the user attempt to ingest, thereby making toy balloon use safer.

#### Brief Description of the Drawings

15 In the detailed description of the invention presented below, reference is made to the drawings, in which:

Fig. 1 is an illustration of various parts of a toy balloon;

Fig. 2a is a perspective view of mandrel forms used in balloon production according to the present invention;

20 Fig. 2b is a perspective representation of vats used in balloon production;

Fig. 2c is a sectional view of a mandrel and location of repulsive taste agent forming the internal surface of balloon according to the present invention;

Fig. 2d is a sectional view of a mandrel and location of repulsive taste agent forming the external surface of balloon according to the present invention;

25 Fig. 3 illustrates a safe toy balloon after forming on mandrel form in according to the present invention;

Fig. 4 is a perspective view of balloon neck portions; and

Fig. 5 illustrates a safe toy balloon installed on an inflation aid.

### **Detailed Description of the Invention.**

With reference now to Figs. 1-5, reference numerals refer to the same or like elements.

Fig. 1 is an illustration for referencing various parts of an inflatable member such as a latex toy balloon or toy balloon 20. As shown, a toy balloon 20 includes a balloon body 22 having an exterior surface 24 and an interior surface 26. The balloon body 22 is contiguous with a balloon neck 34 consisting of neck portion 36, a mid neck portion 37, and near neck portion 38 adjoining a neck rim 40.

Referring now to Figs. 2a-2d, Fig. 2a is a perspective view of mandrel forms used in balloon production according to the present invention showing a mandrel support 58 with a plurality of individual mandrel forms or mandrels 52, that together make up a dipping assembly 50 commonly used in balloon production. Individual mandrel forms 52 consist of mandrel body 54 and a mandrel neck portion 56. To produce a latex balloon, the dipping assembly 50 is dipped progressively into a series of vats 62, 64, 66 as shown in Fig. 2b comprising suitable balloon forming material such as suitable latex liquid material (not seen but well known), hereafter referred to simply as latex liquid 61, although it is usually a formulation of latex with other materials. The progressive dipping, similar to a candle making process, builds up the thickness of the balloon 20 until the desired thickness is obtained. This is illustrated in Fig. 2c, a sectional view of a mandrel and location of repulsive taste agent 53 forming the internal surface of balloon according to the present invention.

Fig. 2b is a perspective representation of vats used in balloon production. The first embodiment of the present invention consists of a first vat 62 containing a revolting or repulsive or obnoxious tasting agent 53 such as Denatonium Benzoate or other combinations of suitable materials. The remaining plurality of vats 64-66 contains untainted liquid latex 61. According to C Tech Corporation, Denatonium Benzoate is the world's bitterest known substance and is widely used to denature many products such as anti-freeze. In the preferred embodiment, (shown in Fig. 2c), a safety coating containing an repulsive or obnoxious tasting agent 53, as is applied

to mandrel 52 by dipping into a vat 62 (shown in Fig. 2b) containing the repulsive or obnoxious tasting agent 53 to a depth H1 that, as shown, includes all of mandrel body 54 and about half of mandrel neck 56, thereby leaving the balloon neck portion free of the repulsive taste agent 53.

5        Alternately, the repulsive or obnoxious tasting coating 53 may be applied to height or depth H1 of the mandrel 52 by spray or other means for the purpose of coating the interior surface 26 of the toy balloon with safety coating 53. In this case, the first vat 62 therefore need not include the repulsive taste agent 53. A toy balloon formed after spraying or precoating the mandrel 52 as such will have an interior  
10      surface 26 that incorporates the repulsive taste agent 53 so that if broken after inflation, interior surfaces 26 of substantially all parts of the balloon will be tainted with the repulsive taste agent 53 and therefore likely to be expelled if a user should attempt to ingest it.

In another embodiment the entire interior surface 26 of toy balloon 20  
15      including the interior of neck 34 contains the repulsive taste agent 53 and isolation of the repulsive taste be provided employing a balloon support device as will be described in Fig. 5.

Fig. 2d is a sectional view of a mandrel 52 and location of repulsive taste agent 53 on the exterior surface of the balloon. To produce this embodiment, balloon  
20      mandrel 52 is first dipped into a progression of liquid latex vats 66 and 64, and lastly into vat 62 containing the repulsive taste agent 53 thereby creating a safety coating on the external surface 24 of balloon 20, this having an advantage, for example, of not having the taste agent 53 build up on the mandrel or interfere with the balloon releasing there from. The option exists to evert balloon 20 so the safety coating  
25      would then be on the interior surface 26 and the exterior relatively devoid of the safety coating and unpalatable taste. The safety coating would perform its function if the balloon were to burst and thereby expose the repulsive taste agent.

Yet another method of safety coating the exterior surface of a toy balloon with a repulsive taste agent could be accomplished by bringing the toy balloons into

contact with media containing the repulsive taste agent, for example tumbling with cloth wetted with a suitable carrier mixture, such as poly glycol and the repulsive taste agent. A dry powder mixture could optionally be employed. Again, the option would exist to evert the toy balloons in a manner common in the manufacture of latex gloves,

Fig. 3 shows yet another embodiment of the invention, an repulsive or unpleasant taste agent 53 introduced into the fluid stream 82, by means similar to an engine carburetor atomatizing of fuel, used to inflate the toy balloon and thereby safety coat and render the interior surface 26 unpleasant tasting. In this case, the entire interior surface of the toy balloon will have the repulsive taste, except for an interior portion 84 of balloon neck 34, seen in Fig. 3, is in contact with fluid filling nozzle 80 and thus protected from receiving the safety coating and associated repugnant taste.

Fig. 3 is a perspective view of fluid filling nozzle 80 adapted to introduce safety coating 53 to the interior surface 26 of toy balloon 20. Safety coating 53 may be a fluid or powder introduced into fluid stream represented by arrow 82 by any suitable means as suggested diagrammatically by Fig. 3.

Fig. 4 is a perspective view of balloon neck 34, having portions 36, 37, 38 and neck rim 40, which surrounds orifice 42, and serves to illustrate still another embodiment of the invention. The introduction of media carrying the revolting or repulsive tasting agent 53 into the balloon interior through neck opening 42 for the purpose of coating the interior surface 26 of toy balloon 20. The media, for example might be an ingestible gel, powder, or liquid, like polypropylene glycol mixture. A user might introduce the media and then spread it over the inside surface 26 by massaging balloon body 22. of the balloon. By controlling the penetration and positioning of the media a greater portion of coating will be applied to the body portion than the neck portion 34 so that inflation by mouth will present minimal revolting taste to the user. Such media may be introduced prior to the customer receiving the balloon.

Fig. 5 illustrates a toy balloon removably installed on an inflation aid 70 for isolating the repulsive or unpleasant taste of the balloon interior during inflation by mouth of the toy balloon 20. The applicant's "Balloon Valve Assembly", US Pat. No. 5,496,203 (Murray) would serve such a purpose well. While helpful, the inflation aid 5 70 need not contain a valve. The aid consists of a stem 72, an oval head 74 for supporting toy balloon 20 and a stepped portion 76, which supports balloon neck rim 40 and has been found to aid significantly in securing a tight seal between the balloon 20 and inflation aid 70 during inflation. Such an aid, increases the safety of balloon use during inflation by lessening the risk of balloon neck ingestion should the 10 balloon explode and propel the balloon neck into the users mouth, or the user accidentally inhale during inflation. Following inflation the user may twist the balloon neck and tie a knot the customary fashion or close and seal the balloon by using a device such as the applicant's Related Application, (Applicant's Docket MSD01), entitled "A SAFE TOY BALLOON CLOSURE AND SEALING DEVICE AND ASSEMBLIES USING 15 SAME".

As can be seen, there has been provided a method of producing a safe toy balloon 20 including comprising: (a) an inflatable member or toy balloon 20 having an exterior surface 24, an interior surface 26, a neck portion 34 and a body portion 22; and (b) a safety coating 53 formed on one or more of the surfaces of the inflatable 20 member, the safety coating consisting essentially of repulsive taste agent.

Also there has been provided a method of producing a safe toy balloon 20 including (a) providing a dipping assembly 50 containing at least one toy balloon material supporting mandrel 52; (b) providing a bank of vats, 62-66, including at least one vat containing liquid toy balloon material 61; (c) coating the at least one toy 25 balloon material supporting mandrel 52 with a repulsive taste agent 53 to achieve a repulsive taste coated mandrel; and (d) dipping the repulsive taste coated mandrel into the at least one vat containing liquid toy balloon material 61 to form a toy balloon having a repulsive interior coating from the repulsive taste coated mandrel.

In accordance with another aspect of the invention, there is provided a safe toy balloon including (a) an inflatable member or toy balloon 20 having an exterior surface 24, an interior surface 26, a neck portion 34 and a body portion 22; and (b) a safety coating 53 formed on selected surfaces of inflatable member or toy balloon 20,  
5 the safety coating consisting essentially of repulsive taste agent.

To further recap, means were shown for both making and for post processing a toy balloon 20 to incorporate and associate a safety coating 53 containing a repulsive taste agent with the exterior surface 24 of toy balloon 20, or portions thereof, and then reversing the toy balloon thereby causing the repulsive taste agent  
10 53 become associated with the interior surface of the toy balloon.

It was further shown that a safety coating 53 could be optionally be associated with both the interior surface 26 as well as the exterior surface 24, or portions thereof, of toy balloon 20 in the same or in differing degrees of repulsiveness of the safety coating 53.

15 While preferred embodiments of the invention have been illustrated and described, and while other alterations will be apparent, it should be understood that other variations would become apparent to one skilled in the art without departing from the principals herein. Accordingly, the invention is not to be limited to the exact configurations illustrated in the drawings.